



TITLE:

# PARASITIC GASTROPODS FOUND IN ECHINODERMS FROM JAPAN

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# PARASITIC GASTROPODS FOUND IN ECHINODERMS FROM JAPAN\*

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*With Plate VI*

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Hitherto twenty one species of gastropods parasitic on echinoderms have been recorded from Japan by various authors, such as RANDALL et HEATH (1912), S. HIRASE (1920, 1927, 1932), DALL (1925), GISLÉN (1927), IS. TAKI (1929), IWANOFF (1933), MORTENSEN (1940, 1943), KAWAHARA (1943), HABE (1944, 1950, 1951), KURODA (1949) and KURODA et HABE (1950). In this paper eight more species are added to this list. Of these six are new to science and also parasitic habits are confirmed in other two species which have never been noticed in this country.

It is my pleasant duty to acknowledge here my deep indebtedness to Dr. Taku KOMAI and Dr. Tokubei KURODA for their kind direction and encouragement in the course of my study. My hearty thanks are also due to Prof. Denzaburo MIYADI, Dr. Iwao TAKI, Dr. Huzio UTINOMI, Dr. Takasi TOKIOKA, Messrs. Toshihiko YAMANOUTI, Torao YAMAMOTO, Akibumi TERAMACHI, Masuoki HORIKOSI and Takashi SAITO for their kindness in placing their collections at my disposal.

## Family EULIMIDAE

### Genus *Balcis* LEACH 1847

#### 1. *Balcis kuronamako* new species

(Pl. VI, Fig. 20)

Shell subulate, slightly bending backwardly on the early whorls, rather solid, milky white except for the snowy white early whorls, smooth and polished; apex rather small but blunt; whorls 11 in number, each whorl rather

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\* Contributions from the Seto Marine Biological Laboratory, No. 178.

flattened; suture appressed; body whorl two-fifths of the shell length, gently arcuate on the base; varices irregularly disposed on the right side; aperture ovate; outer margin arcuate forwardly; columellar margin thickened and rather straightened; umbilicus closed. Operculum thin, horny, paucispiral as in other eulimids.

Length 8.3 mm, breadth 2.6 mm (figured type specimen).

Habit: On the surface of *Holothuria* aff. *vagabunda* SELENKA—black-coloured littoral sea-cucumber.

Type locality: Shirahama, Wakayama Pref., Honshu.

Di tribution: The coast of Wakayama Pref., Honshu (Shirahama, Fukuro, Miotsu and Satono).

Remarks: *Balcis aciculatus* (PEASE 1860)<sup>1,2</sup> from Hawaii and *Balcis venusius* (PEASE 1867)<sup>3</sup> from Tahiti are very much allied to this new species. However, both are smaller even in the adult stage and unknown about the parasitic features. *Balcis soliduloides* HABE 1951 is also smaller in size and stouter than the present new species.

## 2. *Balcis soliduloides* HABE

(Pl. VI, Fig. 25)

1943 *Eulima* sp. KAWAHARA, Botany and Zoology (Japan), 11, p. 976, figs. 3B, C.

1951 *Balcis soliduloides* HABE, Illust. Cat. Jap. Shells, No. 14, p. 94.

Length 7.5 mm, breadth 2.8 mm (figured type specimen).

Habit: On the surface of *Holothuria atra* JAEGER, *Holothuria argus* (JAEGER) and *Stichopus chloronotus* BRANDT.

Distribution: Suô, Formosa (type locality) and Ishigaki-jima.

## 3. *Balcis yamazii* new species

(Pl. VI, Figs. 6, 9)

Shell acutely pyramidal, somewhat bent to the right side, milky white except for the snowy early whorls, rather solid, smooth and polished; whorls 8 in number; each whorl slightly convex and suture impressed distinctly; all varices decidedly impressed on the right side of each whorl and form a slowly receding ascending line; body whorl one-third of shell length, of which the

1) Proc. Zool. Soc. London, 1860, p. 438.

2) PILSBRY 1917, Proc. Acad. Nat. Sci. Phila., 69, p. 222, figs. 11a, b, pl. 14, fig. 8.

3) Amer. Jour. Conch., 3, p. 294, pl. 24, fig. 24.

periphery obtusely angulated and the base rather flattened; aperture rather small, ovate; outer margin roundly curved, somewhat thickened and forwardly arcuate, columellar margin short, curved and thickened; umbilical fissure present on the outside of it.

Length 7.5 mm, breadth 3.1 mm (figured type specimen).

Habit: On the surface of *Holothuria lubrica* var. *moebii* (LUDWIG).

Type locality: Shirahama, Wakayama Pref., Honshu.

Remarks: *Balcis bovicornus* (PILSBRY 1905)<sup>4</sup> from Ogasawara Islands has the quite round body whorl. *Balcis tortuosus* (A. ADAMS et REEVE 1850)<sup>5</sup> from the China Sea is another allied species, but it has slenderer and more distinctly tortuous form. *Balcis kanaka* (PILSBRY 1917)<sup>6</sup> from Hawaii is a robuster species.

#### 4. *Balcis astropectenicola* KURODA et HABE

(Pl. VI, Fig. 16)

1950 *Balcis astropectenicola* KURODA et HABE, Illust. Cat. Jap. Shells, No. 9, p. 60.

Length 7.2 mm, breadth 2.4 mm (figured type specimen).

Habit: On the oral side of *Astropecten polyacanthus* MÜLLER et TROSCHEL and *Luidia maculata* MÜLLER et TROSCHEL—littoral sea-stars.

Distribution: Tanabe Bay, Wakayama Pref. (type locality) and Miho Bay, Tottori Pref., Honshu.

#### 5. *Balcis robustus* (A. ADAMS)

(Pl. VI, Fig. 4)

1861 *Eulima robusta* A. ADAMS, Ann. Mag. Nat. Hist., (3) 7 (38), p. 125.

1886 *Eulima robusta* TRYON, Man. Conch., 8, p. 271, pl. 68, fig. 25.

1895 *Eulima robusta* PILSBRY, Cat. Mar. Moll. Japan, p. 77.

Length 4.8 mm, breadth 2.4 mm (figured specimen collected from Ago Bay, Mie Pref., Honshu).

Habit: On the oral side of *Astropecten polyacanthus* MÜLLER et TROSCHEL—littoral sea-star.

4) Proc. Acad. Nat. Sci. Phila., 57, p. 111, pl. 11, figs. 9, 10.

5) Zool. Voy. Samarang, Moll., p. 53, pl. 11, fig. 26.

6) Proc. Acad. Nat. Sci. Phila., 69, p. 310, fig. 3.

Distribution: Mishima (=Mino-shima), in the Japan Sea (type locality); Shirahama, Wakayama Pref. and Ago Bay, Mie Pref., Honshu.

## 6. *Balcis acicula* (GOULD)

- 1849 *Stilifer acicula* GOULD, Proc. Boston Soc. Nat. Hist., 3, p. 84.  
 1854 *Eulima vitrea* A. ADAMS, Proc. Zool. Soc. London, (1851), p. 277.  
 1854 *Eulima vitrea* A. ADAMS, Thes. Conch., 2, p. 799, pl. 169, fig. 35.  
 1862 *Stilifer acicula* GOULD, Otia Conch., pp. 54, 245.  
 1865 *Eulima vitrea* SOWERBY, Conch. Icon., p. 19.  
 1886 *Eulima acicula* TRYON, Man. Conch., 8, p. 282, pl. 70, figs. 92-95.  
 1899 *Eulima vitrea* CLESSIN, Conch. Cab., 1 (28), p. 10, pl. 2, fig. 7.  
 1903 *Eulima vitrea* SCHEPMAN, Siboga Exped., monogr. 49c, p. 235.  
 1917 *Melanella acicula* PILSBRY, Proc. Acad. Nat. Sci. Phila., 69, p. 223.  
 1943 *Mucronalia* sp. KAWAHARA, Botany and Zoology (Japan), 11 (12), p. 976, fig. 3A.

Shell straight, slender, elongate, thin, transparent, smooth and highly polished; apex small, milky white: whorls 12 or 13; each whorl flattened; suture weakly appressed and coloured with lucid white; aperture elongate oval; columellar margin dilated and thickened; outer margin strongly arched forwardly; operculated.

Length 8.7 mm, breadth 2.2 mm (examined specimen collected from Palao).

Habit: In the coelom or on the surface of *Stichopus chloronotus* BRANDT.

Distribution: Fejee Islands (type locality); Hawaii Islands; Palao; Ishigaki Island, Loochoo.

## 7. *Balcis teramachii* new species

(Pl. VI, Figs. 26, 27)

Shell straight, smooth, glossy and semitransparently milky white; whorls 15 in number, each whorl flattened and suture weakly appressed; body whorl about one-third of the shell length, of which the base is rounded; aperture ovate; outer margin roundly arched and arcuate forwardly; columellar margin slightly curved and thickened; the callus dilated over the umbilical fissure.

Length 8.2 mm, breadth 2.6 mm (figured type specimen).

Habit: On the surface of *Mesolhuria parva* (THÉEL)—deep-sea sea-cucumber.

Type locality: Tosa Bay, Shikoku.

8. *Balcis peronellicola* KURODA et HABE

(Pl. VI, Fig. 17)

1950 *Balcis peronellicola* KURODA et HABE, Illust. Cat. Jap. Shells, No. 9, p. 60.

Length 4.3 mm, breadth 1.5 mm (figured type specimen).

Distribution: Yura, Wakayama Pref. (type locality); Suiken in Wakayama City and Mukai-jima near Onomichi City, Hiroshima Pref., Honshu.

Habit: Around the mouth of *Peronella japonica* MORTENSEN—a sand-dwelling cake-urchin.9. *Balcis auratus* (S. HIRASE)

(Pl. VI, Fig. 11)

1920 *Melanella aurata* S. HIRASE, Zool. Mag. (Japan), 32 (385), p. 345, pl. 6.1927 *Melanella aurata* S. HIRASE, Nippon Dobutsu-Zukan, p. 1462.

Length 4.0 mm., breadth 1.5 mm (figured specimen collected from Shirahama, Wakayama Pref., Honshu).

Habit: On the shell of *Anthocidaris crassispina* (A. AGASSIZ)—littoral sea-urchin.

Distribution: Naruto, Tokushima Pref. (Type locality) and Shirahama, Wakayama Pref., Honshu.

10. *Balcis langfordi* (DALL)1925 *Strombiformis langfordi* DALL, Nautilus, 38 (3), p. 97.Habit: On the shell of *Anthocidaris crassispina* (A. AGASSIZ).

Type locality: Shimoda, Izu Peninsula, Honshu.

11. *Balcis komaii* HABE

(Pl. VI, Fig. 10)

1950 *Balcis komaii* HABE, Illust. Cat. Jap. Shells, No. 6, p. 44.

Length 4.1 mm, breadth 1.9 mm (figured type specimen).

Habit: On the arm of *Comanthus japonicus* (J. MÜLLER)—littoral crinoid.

Type locality: Shirahama, Wakayama Pref., Honshu.

12. *Balcis akauni* new species

(Pl. VI, Fig. 5)

Shell slender, acutely attenuate above, slightly bent to the left side backwardly, thin semitransparent and glassy; whorls 10 in number, each whorl flattened and suture appressed; apex small but blunt; varices impressed and marked with brown-colored stripes, one on each whorl, and they are all on the right side, where they form a stepped ascending line; body whorl rather large and high, a half of shell length, decorated with a narrow brown spiral dotted line at the periphery; aperture elongate oval; outer margin gently curved and arcuate forwardly; columellar margin rather straight, thickened and dilated on the umbilical fissure.

Length 4.6 mm, breadth 1.5 mm, (figured type specimen).

Habit: On the shell of *Pseudocentrotus depressus* (A. AGASSIZ)—littoral sea-urchin.

Type locality: Shirahama, Wakayama Pref., Honshu.

Remarks: This new species may be distinguished from the allied species *Balcis langfordi* (DALL) in having the more slender shell and a dotted brown line at the periphery.

Genus *Stilapex* IREDALE 192513. *Stilapex philippinarum* (SOWERBY)

(Pl. VI, Figs. 23, 24)

1900 *Mucronalia philippinarum* SOWERBY, Proc. Malac. Soc. London, 4, p. 127, pl. 11, fig. 5.

1944 *Mucronalia mitteri* HABE, Jap. Jour. Malac. (Venus), 13 (5-8), p. 192, fig. 14 (non PETIT 1851)

1944 *Mucronalia mitteri* HABE, l. c., p. 312.

Height 10.4 mm, breadth 5.3 mm (figured specimen collected from Shirahama, Wakayama Pref., Honshu).

Height 9.8 mm, breadth 4.8 mm (figured specimen from the same locality).

Habit: On the peristome of *Coscinasterias acutispina* (STIMPSON) — littoral sea-star.

Distribution: Cebu, Philippines (type locality); Amami Islands; Shirahama, Wakayama Pref. and Sagami Bay, Honshu.

Remarks: The head of the animal of this species is white, except for the fleshy orange tentacles. The Siboga specimens obtained from the Pasir Pandjang, Binongka Island (Siboga Station No. 220) and so named, was parasi-

tic on *Heterocentrotus mammillatus* (sea-urchin) and seems to be a distinct species closely allied to this species.

### Genus *Mucronalia* A. ADAMS 1860

#### 14. *Mucronalia lactea* (A. ADAMS)

(Pl. VI, Fig. 15)

- 1863 *Leiostraca* (*Mucronalia*) *lactea* A. ADAMS, Jour. Linn. Soc. London, Zool., 7, p. 91.  
1929 *Mucronalia lactea* MAK.YAMA, Venus, 1 (5), p. 168.  
1944 *Mucronalia lactea* HABE, Jap. Jour. Malac. (Venus), 13 (5-8) p. 312.  
1950 *Mucronalia lactea* KURODA et HABE, Illust. Cat. Jap. Shells, No. 9, p. 58, pl. 10, fig. 11.

Length 4.8 mm, breadth 1.8 mm (figured specimen collected from Hatakejima in the Tanabe Bay, Wakayama Pref., Honshu).

Habit: In the coelom of *Leptosynapta ooplax* (MARENZELLAR)—sand-dwelling sea-cucumber.

Distribution: Tanabe Bay, Wakayama Pref. (type locality) and Mukaijima near Onomichi City, Hiroshima Pref., Honshu.

#### 15. *Mucronalia exilis* A. ADAMS

(Pl. VI, Fig. 14)

- 1862 *Mucronalia exilis* A. ADAMS, Ann. Mag. Nat. Hist., (3), 9 (52), p. 295.  
1863 *Leiostraca* (*Mucronalia*) A. ADAMS, Jour. Linn. Soc. London, Zool., 7, p. 91.  
1929 *Mucronalia exilis* MAKIYAMA, Venus, 1, p. 168.  
1944 *Mucronalia exilis* HABE, Jap. Jour. Malac. (Venus), 13 (5-8), p. 311.  
1950 *Mucronalia exilis* KURODA et HABE, Illust. Cat. Jap. Shells, No. 9, p. 58, pl. 10, fig. 12.

Length 2.8 mm, breadth 1.1 mm (figured specimen collected from Suiken, Wakayama City, Honshu).

Distribution: Shimonoseki, Yamaguchi Pref. (type locality); Suiken, Wakayama City and Tanabe Bay, Wakayama Pref., Honshu.



## Family STILIFERIDAE

Genus *Stilifer* BRODERIP 183216. *Stilifer ovoideus* (H. et A. ADAMS)

(Pl. VI, Fig. 18)

- 1850 *Stilifer astericola* H. A. ADAMS et REEVE, Zool. Voy. Samarang, Moll., p. 47, pl. 17, fig. 5 (non BRODERIP 1832)
- 1853 *Stilifer ovoideus* H. et A. ADAMS, Gen. Rec. Moll., 1, p. 239, pl. 25, fig. 4.
- 1878 *Stilifer ovoideus* SOWERBY, Conch. Icon., sp. 2.
- 1884 *Stilifer ovoideus* SOWERBY, Thes. Conch., 5, p. 159, pl. 479, fig. 7.
- 1886 *Stilifer ovoideus* TRYON, Man. Conch., 8, p. 290, pl. 71, fig. 39.
- 1901 *Stilifer ovoideus* SOWERBY, Proc. Malac. Soc. London, 4, p. 209.
- 1901 *Stilifer ovoidea* CLESSIN, Conch. Cab., 1 (28), p. 241, pl. 40, fig. 8.
- 1927 *Stilifer celebensis* S. HIRASE, Nippon Dobutsu-Zukan, p. 1462.
- 1932 *Stilifer celebensis* S. HIRASE, Proc. Malac. Soc. London, 20 (1), pp. 73-76, pls. 7, 8 (non KÜKENTHAL 1897).
- 1933 *Stilifer celebensis* KURODA, Venus, 4 (4), p. 208.

Length 7.4 mm, breadth 5.3 mm (figured specimen collected from Tomioka, Amakusa Island, Kyushu).

Habit: In the arm of *Certionardoa semiregularis* (MÜLLER et TROSCHER).

Distribution: Borneo (type locality); Tomioka, Amakusa, Kyushu; Kushimoto, Wakayama Pref., Misaki and Hayama, Kanagawa Pref., Honshu.

17. *Stilifer utinomii* HABE (emend.)

(Pl. VI, Fig. 22)

- 1951 *Stilifer utinonui* (sic) HABE, Illust. Cat. Jap. Shells, No. 14, p. 93 (a typographical error)

Length 8.9 mm, breadth 5.0 mm (figured type specimen).

Habit: In the arm of *Linckia guildingii* GRAY—Deep-sea sea-star.

Type locality: Shirahama, Wakayama Pref., Honshu.

18. *Stilifer ophidiastericola* HABE

(Pl. VI, Fig. 19)

- 1951 *Stilifer ophidiastericola* HABE, Illust. Cat. Jap. Shells, No. 14, p. 94.

Length 3.5 mm, breadth 2.2 mm (figured type specimen).

Habit: In the arm of *Ophidiaster cribrarium* LÜTKEN and *Ophidiaster loliori* FISHER.

Distribution: Tomioka, Amakusa, Kyushu (type locality) and Kushimoto, Wakayama Pref., Honshu.

## Genus *Rosenia* SCHEPMAN 1913

### 19. *Rosenia castanea* (DALL)

(Pl. VI, Figs. 7, 8)

1925 *Stilifer castanea* DALL, Nautilus, 38 (3), p. 97.

1925 *Stilifer perdepressus* DALL, l. c., p. 97.

1929 *Stilifer castaneus* Is. TAKI, Venus, 1 (4), p. 116, fig. 58.

1943 *Littorina*-like form MORTENSEN, Monogr. Echinoidea, 3 (1), Camarodonta 1, p. 545.

Length 3.5 mm, breadth 3.1 mm (figured specimen collected from Emi, Chiba Pref., Honshu).

Habit: On the shell of *Pseudocentrotus depressus* (A. AGASSIZ)—littoral sea-urchin.

Distribution: Emi and Chikura, Chiba Pref.; Kurosaki, Miura Peninsula, Kanagawa Pref. and Goza, Mie Pref., Honshu.

### 20. *Rosenia yamamotoi* new species

(Pl. VI, Fig. 21)

Shell small, ovate, yellowish white, smooth and polished, with weak growth lines; whorls 4 in number, of which two nuclear whorls are obliquely mucronate; body whorl very large, roundly inflated, separated from the penultimate whorl by the distinctly marginated suture; aperture wide; outer margin arched, thin and sharp; columellar margin also curved, slightly thickened and dilated; umbilicus not perforated. No operculum.

Length 2.2 mm, breadth 1.7 mm (figured type specimen).

Habit: On the shell of young specimen of *Pseudocentrotus depressus* (A. AGASSIZ).

Type locality: Shisô-jima, off Shirahama, Wakayama Pref., Honshu.

Remarks: This new species closely resembles *Stilifer sibogae* SCHEPMANN 1909<sup>7</sup> from the East Indies, but it may be distinguished from the latter in the obliquely mucronate apex and less globular body whorl.

7) Siboga Exped. Monogr. 49 (2), p. 5; l. c., 49 (1), p. 241.

21. *Rosenia tokiokai* new species

(Pl. VI, Figs. 3, 12, 13)

1940 *Mucronalia* (?) sp. MORTENSEN, Monogr. Echinoidea, 3 (1), Aurodonta, p. 251, pl. 65, figs. 2, 3.

Shell ovate, semitransparent, milky white, smooth and polished; apex pointed as in *Stilifer* and coloured snowy white; whorls 9 in number, each whorl somewhat convex, suture considerably impressed; body whorl large, rounded, being contained a half of the shell length; aperture ovate; outer margin arcuate, arched forwardly; columellar margin also curved, somewhat thickened; umbilicus closed. No operculum.

Length 8.6 mm, breadth 5.2 mm (figured type specimen).

Habit: On the peristome of *Diadema setosum* (GRAY)—littoral sea-urchin.

Type locality: Shirahama, Wakayama Pref., Honshu.

Remarks: This new species is allied to *Stilifer mittrei* PETIT (1851)<sup>8,9</sup> found on a Hawaiian *Diadema*, but the latter has less pointed early whorls in the young stage.

Genus *Kiramodulus* KURODA 194922. *Kiramodulus lacteus* KURODA

(Pl. VI, Figs. 1, 2)

1949 *Kiramodulus lacteus* KURODA, Jap. Jour. Malac. (Venus), 15 (5-8), pp. 72-75, fig. 1.

Length 6.3 mm, breadth 7.6 mm (figured type specimen).

Habit: On the arm of a deep-sea sea-star, probably belonging to *Paragonaster* or *Perissogonaster* (according to the identification by Dr. R. HAYASHI).

Type locality: Tosa Bay, Shikoku.

Remarks: The systematic position of this genus and species was quite obscure at its establishment, but later the original author (1950)<sup>10</sup> noticed the fact that the protoconch of this species is *Stilifer*-like, quite characteristic in gastropods. I also could confirm that the animal of this species has no radula. Thus I think that this genus should be placed in the family Stiliferidae.

8) Jour. de Conchyl., 2, p. 27, pl. 2, figs. 8, 9.

9) PILSBRY 1920, Proc. Acad. Nat. Sci. Phila., 72, p. 298, figs. 2a, b.

10) Yumehamaguri, no. 51, p. 79, textfig. (a mimeographed journal).

*Parasitic Gastropods Found in Echinoderms*

Incertae sedis

23. "*Eulima*" sp.

1921 *Melanella* sp. A. H. CLARK, Monogr. Exist. Crinoids, 1, Comatulids 2 (U. S. Nat. Mus., Bull. 82), p. 649.

1927 *Eulima* sp. GISELÉN, Vid. Medd. Dansk Naturh. Foren. Köbenhavn, 83, p. 40.

1950 *Eulima* sp. A. H. CLARK, Monogr. Exist. Crinoids, 1, Comatulids 4c, p. 20.

Habit: On the arm of *Stenometra diadema* (A. H. CLARK).

Distribution: Off Kyushu (lat. 32°17'N., long. 128°11'E.), 201 m; southern Japan, from 80 to 170 fathoms.

24. "*Eulima*" sp.

1922 *Eulima* sp. GISELÉN, Nova Acta Reg. Soc. Sci. Upsaliensis, (4) 5, p. 94.

1947 *Eulima* (probably *Sabinella* or *Melanella*) sp. A. H. CLARK, Monogr. Exist. Crinoids, 1, Comatulids 4b, p. 373.

Habit: On the arm of *Neometra multicolor* (A. H. CLARK).

Locality: Goto Islands, Kyushu, 164 m.

25. "*Mucronalia*" sp.

1943 *Mucronalia* (?) sp. MORTENSEN, Monogr. Echinoidea, 3 (2), Camarodonta 1, p. 251.

Habit: On the young specimen of *Temnotrema sculptum* A. AGASSIZ.

Locality: Mutsu Bay, Honshu.

26. "*Mucronalia*" sp.

1943 *Mucronalia* (?) sp. MORTENSEN, *l. c.*, p. 251.

Habit: On *Temnotrema sculptum* A. AGASSIZ.

Locality: Off Okino-shima, Kyushu.

27. "*Stilifer*" sp.

1917 *Stylifer*-like sp. MATSUMOTO, Monograph of Japanese Ophiuroidea (Journ. Coll. Sci. Imp. Univ. Tokyo, 38, p. 222.

Habit: At the genital slits of *Ophiothrix macrobrachia* CLARK.

Locality: Sagami Sea and Uruga Channel.

## Family PAEDOPHOROPIDAE

Genus *Paedophoropus* IWANOFF 193328. *Paedophoropus dicoelobius* IWANOFF

1933 *Paedophoropus dicoelobius* IWANOFF, Zool. Anz., 104, pp. 161-165.

Habit: In the polian vesicle of *Eupyrus pacificus* ÖSTERGREN—deep-sea sea-cucumber.

— Locality: Japan.

## Family ASTEROPHILIDAE

Genus *Asterophila* RANDALL et HEATH 191229. *Asterophila japonica* RANDALL et HEATH

1912 *Asterophila japonica* RANDALL et HEATH, Biol. Bull., 22, pp. 98-103, pls. 1 & 2.

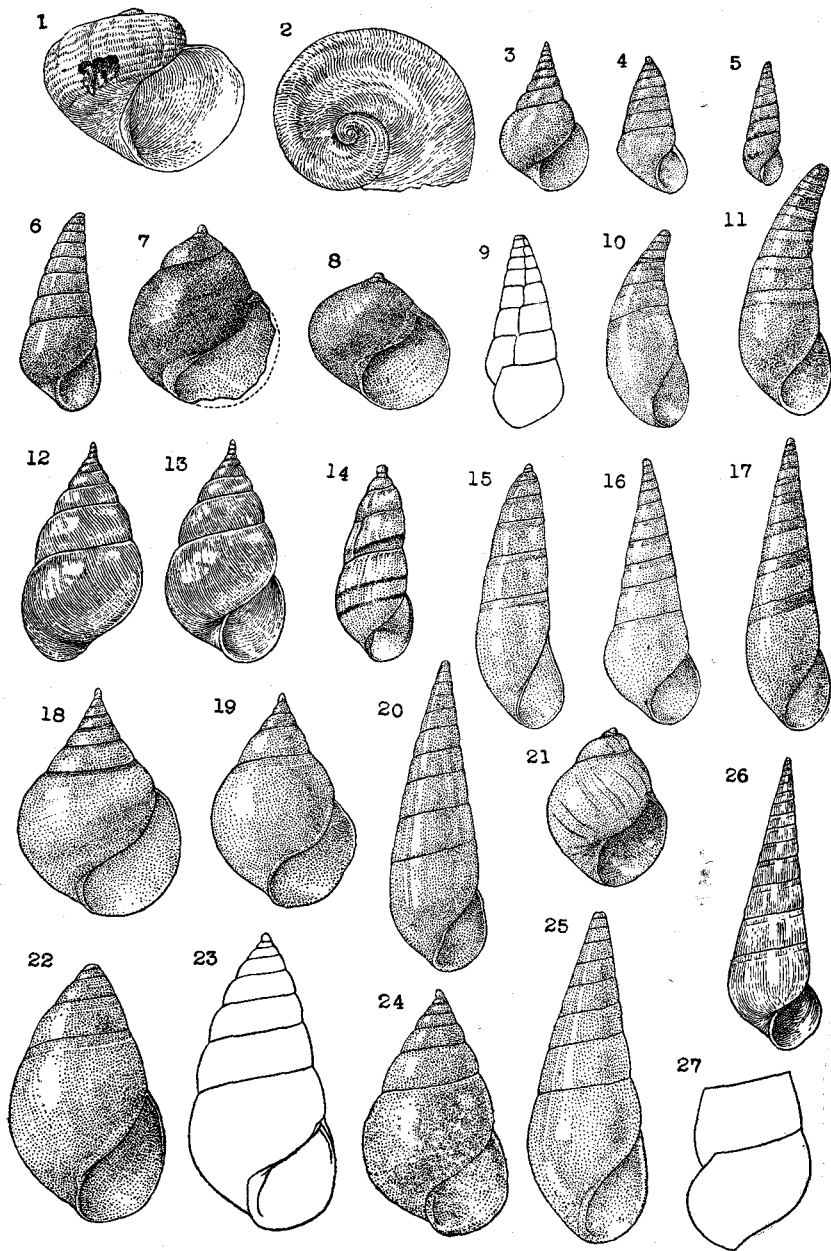
Habit: In the coelom of the arm of *Pedicellaster* (= *P. magister orientalis* FISHER)—sea-star.

Locality: Off the coast of Corea, 150-163 fathoms. (Albatross Stations 4861-4867).

## EXPLANATION OF PLATE VI

(Each figure is unequally magnified.)

- Figs. 1, 2. *Kiramodulus lacteus* KURODA (type specimen) (6.3 mm × 7.6 mm)
3. *Rosenia tokiokai* n. sp. (6.0 mm × 3.6 mm)
4. *Balcis robustus* (A. ADAMS) (4.8 mm × 2.4 mm)
5. *Balcis akauni* n. sp. (type specimen) (4.6 mm × 1.5 mm)
- 6, 9. *Balcis yamazii* n. sp. (type specimen) (7.5 mm × 3.1 mm)
7. *Rosenia castanea* (DALL) (3.5 mm × 3.1 mm)
8. *Rosenia castanea* (DALL) (*perdepressus*-form) (2.8 mm × 2.8 mm)
10. *Balcis komaii* HABE (type specimen) (4.1 mm × 1.9 mm)
11. *Balcis auratus* (S. HIRASE) (4.0 mm × 1.5 mm)
- 12, 13. *Rosenia tokiokai* n. sp. (type specimen) (8.6 mm × 5.2 mm)
14. *Mucronalia exilis* (A. ADAMS) (2.8 mm × 1.1 mm)
15. *Mucronalia lactea* (A. ADAMS) (4.8 mm × 1.8 mm)
16. *Balcis astropectenicola* KURODA et HABE (type specimen) (7.2 mm × 2.4 mm)
17. *Balcis peronellicola* KURODA et HABE (type specimen) (4.3 mm × 1.5 mm)
18. *Stilifer ovoideus* (H. et A. ADAMS) (7.4 mm × 5.3 mm)
19. *Stilifer ophidiastericola* HABE (type specimen) (3.5 mm × 2.2 mm)
20. *Balcis kuronamako* n. sp. (type specimen) (8.3 mm × 2.8 mm)
21. *Rosenia yamamotoi* n. sp. (type specimen) (2.2 mm × 1.7 mm)
22. *Stilifer utinomii* HABE (type specimen) (8.9 mm × 5.0 mm)
23. *Stilapex philippinarum* (SOWERBY) (10.4 mm × 5.3 mm)
24. *Stilapex philippinarum* (SOWERBY) (9.8 mm × 4.8 mm)
25. *Balcis soliduloides* HABE (type specimen) (7.5 mm × 2.8 mm)
- 26, 27. *Balcis teramachii* n. sp. (type specimen) (8.2 mm × 2.6 mm)



T. HABE: PARASITIC GASTROPODS FOUND IN ECHINODERMS.